NASA's Applied Remote Sensing Training (ARSET) Program

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The NASA Applied Remote Sensing Training Program conducts professional trainings in the application of Earth Science data for air quality, water resources and disaster management. The goal of the program is to build the skills to integrate NASA Earth Science into agencies' decision-making activities. The program works directly with agencies and policy makers to develop hands-on and online courses that teach end-users how to access, visualize and ***apply*** NASA Earth Science Data in their professional area. Training includes guided hands-on activities and Case Studies of remote sensing observations from NASA's fleet of Earth Observing System (EOS) satellites, models and web-tools in the context of decision making activities.

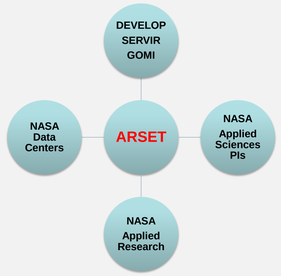
Goals and Objectives

GOAL

Increase utilization of NASA observational and model data for decision-support.

Objectives

- Provide end-user communities and institutions with **professional hands-on technical workshops**
- Build long term partnerships with end-user communities and institutions in the public and private sectors



ARSET disseminates the usage of ***existing*** NASA data, web tools, Decision Support Systems and applied research, in addition to collaborating with other capacity building programs within NASA

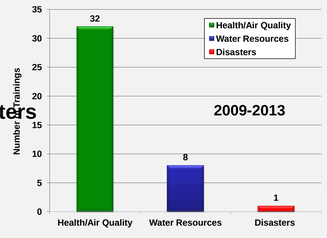
Trainings by Societal Benefit Area

Health (Air Quality) (AQ)
- 2008 – present
- 26 Trainings
- +500 end-users

Water Resources and Disasters
- April 2011 – present
- 2 Trainings

Ecological Forecasting
- Est. 2013

Other Health and Disasters Application Areas
- Est. 2014

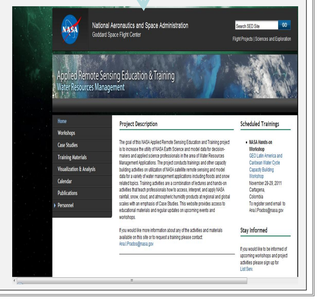


Water Resources and Disasters
http://water.gsfc.nasa.gov

- Flooding/Drought - **TRMM, MERRA, NLDAS**: Latin America (Colombia/GEO, November 2011); South Central U.S. (U. of Oklahoma, June 2012); **online course November 2012**
- Coming up - **Courses on MODIS snow products**: local and state agencies in California and Colorado River Basin (Fall 2012/Spring 2013).
- Coming Up: online course on **evapotranspiration and other land products, drought applications;** western US end-users and internationally (Spring 2013).

Case Studies

Publicly available Modules in English and Spanish



Increasing the Use of NASA Remote Sensing Data via in-person training workshops and on-line courses.

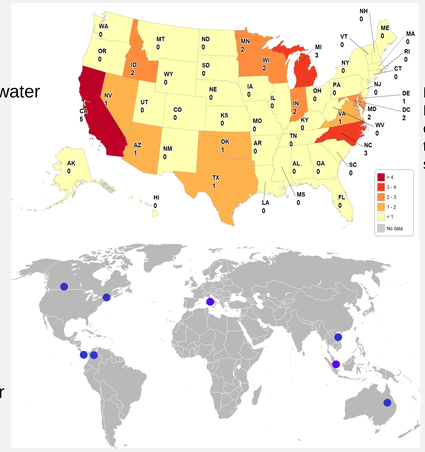
http://airquality.gsfc.nasa.gov

Who is ARSET Training?

- **Public Sector:** U.S EPA, USDA, BLM, NOAA, regional, state, county agencies, Tribal Nations, water resources managers, watershed and reservoir managers
- **Private Sector:** Industry, agricultural sector, NGOs
- **Attendees at Professional Conferences**
- **Participants of NASA Campaigns**

End-User Feedback:

- Positive reviews from 'Training customer satisfaction surveys'.
- **Continued requests for follow-up trainings**: California Air Resources Board, LADCO
- Increase in number of end-users trained per year since 2008
- Students Becoming Teachers as trainers !



Number of NASA online or hands-on trainings per state.

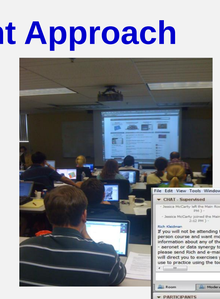
International Capacity building/workshops

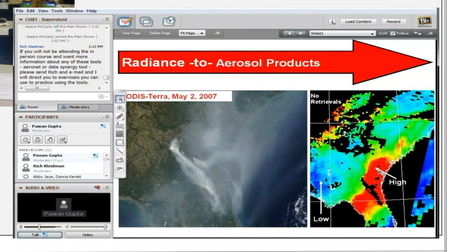
Workshop Development Approach

Basic in person course
- For individuals and institutions new to remote sensing
- Trainings at professional conferences

Online courses
- Provide background material in preparation for in person trainings
- Advanced online courses on special topics

Advanced in person course
- Focused on a specific application/problem: for example impact of snow melt in California on stream flow
- Requires basic online or in person course.





Project Outcomes

NASA applied remote sensing training activities have reached many decision-makers world wide and are helping to increase the value of NASA data for environmental applications. All training activities to date have been highly rated and we continue to seek new ways to better quantify the benefit of this program to end-users' decision-making activities. The program is preparing to further expand training activities in the areas of water resources and disaster management in 2012 and 2013.

For updates and notification of upcoming workshops sign up for the project listserv:

Air Quality
https://lists.nasa.gov/mailman/listinfo/arset
Water Resources/Disasters
https://lists.nasa.gov/mailman/listinfo/nasa-water-training

Acknowledgements: NASA Applied Sciences Program

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Applying NASA Data: Air Quality Case Studies

Decision-Support Template with step-by-step instructions:

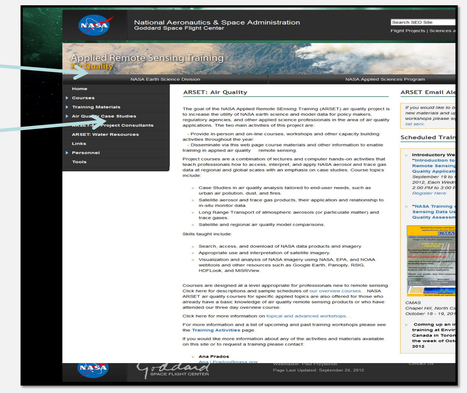
1) Access to imagery
2) Access to meteorological, model, in-situ, or other information
3) Image analysis and interpretation
4) *Air Quality Assessment:*
   Type of event: smoke, dust ?
   Where is the pollution coming from?
   Potential health impacts

http://airquality.gsfc.nasa.gov

Publicly available Modules

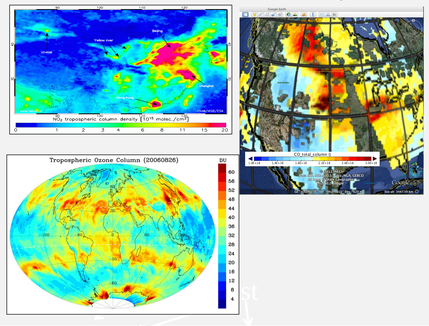
Case Studies

Upcoming trainings

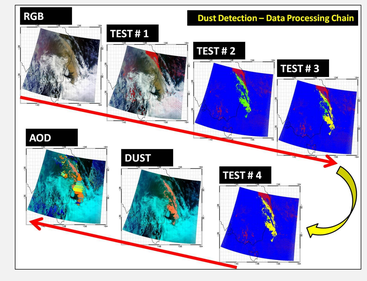


Air Quality Module Development examples:

Trace Gas Monitoring



Dust Detection



Particulate Matter Air Quality